

**IN THE CLAIMS**

Please amend the claims as follows:

14. (Currently Amended) A photolithographic sensitive coated substrate comprising:

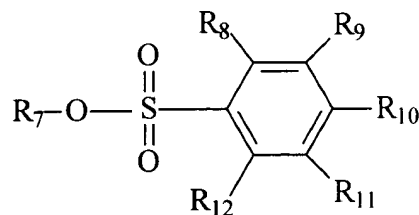
- (a) a substrate;  
(b) a thermally cured undercoat on the substrate; and  
(c) a radiation-sensitive resist topcoat on the thermally cured undercoat;

wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator;

wherein said radiation-sensitive resist topcoat is a chemically amplified resist containing silicon.

15. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer comprises monomer units selected from the group consisting of: hydroxystyrene, hydroxyalkyl acrylate or methacrylate, hydroxycycloalkyl acrylate or methacrylate, benzyl alcohols, and allyl alcohol monomer units.

16. (Original) The coated substrate of claim 14 wherein said thermal acid generator has the general structure:



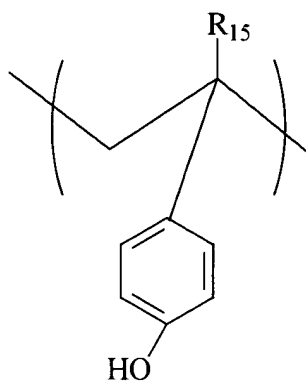
where R<sub>7</sub> is a substituted or unsubstituted alkyl, cycloalkyl or aromatic group wherein the substituted group is halogen, alkoxy, aromatic, nitro or amino group; and R<sub>8</sub> to R<sub>12</sub> are independently selected from hydrogen, linear or branched C<sub>1</sub> to C<sub>4</sub>

alkyl, alkoxy, amino, alkylamino, aryl, alkenyl, halogen, acyloxy, cycloalkyl, or annulated cycloalkyl, aromatic and heterocyclic groups.

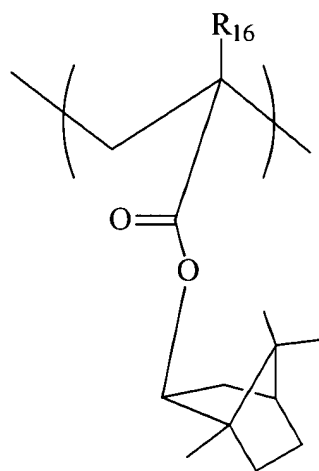
17. (Original) The coated substrate of claim 15 wherein said hydroxyl-containing polymer comprises monomer units selected from the group consisting of: hydroxyalkyl acrylate or methacrylate and allyl alcohol units.

18. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer further comprises monomer units of cycloaliphatic ester of acrylic or methacrylic acid units.

19. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer comprises the following monomer units:



(A)

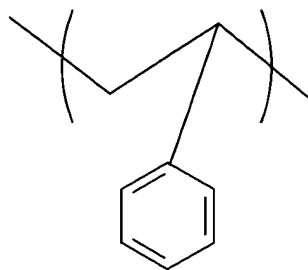


(B)

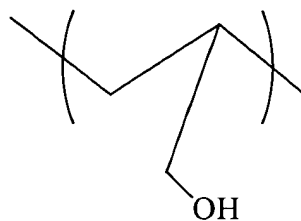
wherein R<sub>15</sub> and R<sub>16</sub> are independently a hydrogen or a methyl.

20. (Original) The coated substrate of claim 19 wherein the mole % of monomer unit (A) is about 25 to 60 mole % and the mole % of monomer unit (B) is about 40 to 75 mole %.

21. (Original) The coated substrate of claim 14 wherein said hydroxyl-containing polymer comprises the following monomer units:



(C)



(D)

22. (Original) The coated substrate of claim 21 wherein the mole % of monomer unit (C) is about 39-60 mole % and the mole % of monomer unit (D) is about 40 to 61 mole %.

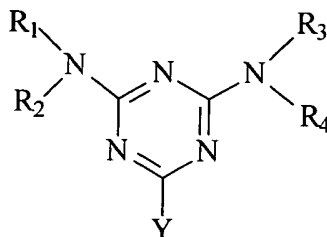
23. (Currently Amended) The coated substrate of claim 14 wherein the hydroxyl-containing polymer comprises biphenyl acrylate or methacrylate and hydroxyethyl acrylate or methacrylate.

24. (Original) The coated substrate of claim 23 wherein the amount of biphenyl acrylate or methacrylate is about 50 to 90 mole % and the amount of hydroxyethyl acrylate or methacrylate is about 10 to 50 mole %.

25. (Cancelled)

26. (Cancelled)

27. (Original) The coated substrate of claim 14 wherein said amino cross-linking agent has the general formula



wherein Y is  $\text{NR}_5\text{R}_6$ , or a substituted or unsubstituted aryl or alkyl group,  $\text{R}_1$  to  $\text{R}_6$  are independently a hydrogen or a group of the formula  $-\text{CH}_2\text{OH}$  or  $\text{CH}_2\text{OR}_{17}$  where  $\text{R}_{17}$  is a alkyl group of about 1 to 8 carbons.

28. (Currently Amended) A process for the production of relief structures comprising the steps of:

(a) forming a coated substrate; wherein said coated substrate comprises a substrate; a thermally cured undercoat disposed on said substrate; and a radiation-sensitive resist topcoat disposed on said thermally cured undercoat; ~~and~~ wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator; and wherein said radiation-sensitive resist topcoat is a chemically amplified resist containing silicon;

(b) imagewise exposing said radiation-sensitive resist topcoat to actinic radiation; and

(c) forming a resist image by developing said radiation-sensitive resist topcoat with a developer.

29. (Currently Amended) The process of claim ~~26~~ 28, wherein said hydroxyl-containing polymer comprises about 30 to 60 mole % of hydroxystyrene monomer units and 40 to 70 mole % of isobornyl acrylate or methacrylate monomer units.

B3  
30. (Currently Amended) The process of claim 26-28, wherein said hydroxyl-containing polymer comprises about 39 to 60 mole % of styrene monomer units and about 40 to 61 mole % of allyl alcohol monomer units.

31. (Currently Amended) The process of claim 26-28, wherein said hydroxyl-containing polymer comprises about 50 to 90 mole % of biphenyl acrylate or methacrylate and 10 to 50 mole % of hydroxyethyl acrylate or methacrylate~~the amount of biphenyl acrylate or methacrylate is about 50 to 90 mole % and the amount of hydroxyethyl acrylate or methacrylate is about 10 to 50 mole %.~~

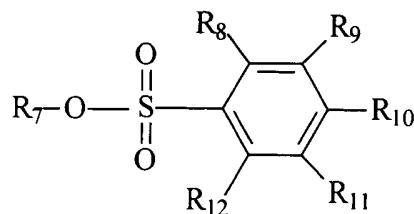
32. (Cancelled)

B4  
33. (Currently Amended) The process of claim 26-28, further comprising the step of:  
removing said thermally cured undercoat composition to form an image thereof.

B5  
34. (New) A photolithographic sensitive coated substrate comprising:  
(a) a substrate;  
(b) a thermally cured undercoat on the substrate; and  
(c) a radiation-sensitive resist topcoat on the thermally cured undercoat;  
wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator;

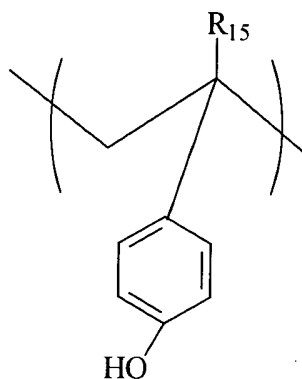
\* [ wherein said hydroxyl-containing polymer further comprises monomer units of ) # R  
cycloaliphatic ester of acrylic or methacrylic acid units.

35. (New) The coated substrate of claim 34, wherein said thermal acid generator has the general structure:

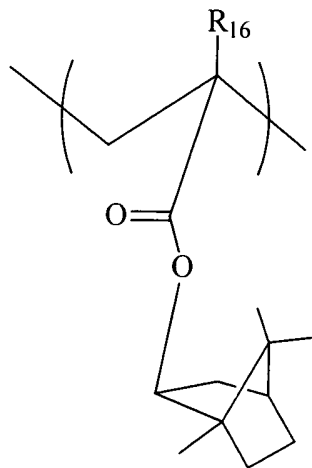


where  $R_7$  is a substituted or unsubstituted alkyl, cycloalkyl or aromatic group wherein the substituted group is halogen, alkoxy, aromatic, nitro or amino group; and  $R_8$  to  $R_{12}$  are independently selected from hydrogen, linear or branched  $C_1$  to  $C_4$  alkyl, alkoxy, amino, alkylamino, aryl, alkenyl, halogen, acyloxy, cycloalkyl, or annulated cycloalkyl, aromatic and heterocyclic groups.

36. (New) The coated substrate of claim 34, wherein said hydroxyl-containing polymer comprises the following monomer units:



(A)

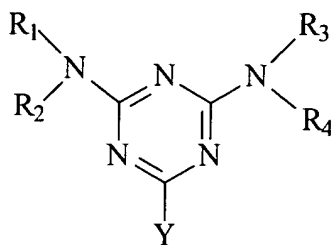


(B)

wherein  $R_{15}$  and  $R_{16}$  are independently a hydrogen or a methyl.

37. (New) The coated substrate of claim 36, wherein the mole % of monomer unit (A) is about 25 to 60 mole % and the mole % of monomer unit (B) is about 40 to 75 mole %.

38. (New) The coated substrate of claim 34, wherein said amino cross-linking agent has the general formula



wherein  $\text{Y}$  is  $\text{NR}_5\text{R}_6$ , or a substituted or unsubstituted aryl or alkyl group,  $\text{R}_1$  to  $\text{R}_6$  are independently a hydrogen or a group of the formula  $-\text{CH}_2\text{OH}$  or  $\text{CH}_2\text{OR}_{17}$  where  $\text{R}_{17}$  is an alkyl group of about 1 to 8 carbons.

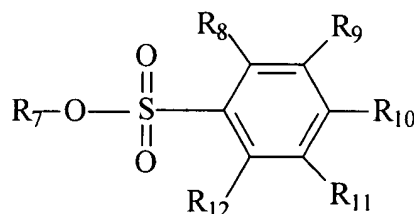
39. (New) A photolithographic sensitive coated substrate comprising:

- (a) a substrate;
- (b) a thermally cured undercoat on the substrate; and
- (c) a radiation-sensitive resist topcoat on the thermally cured undercoat;

wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator;

wherein said hydroxyl-containing polymer comprises biphenyl acrylate or methacrylate and hydroxyethyl acrylate or methacrylate.

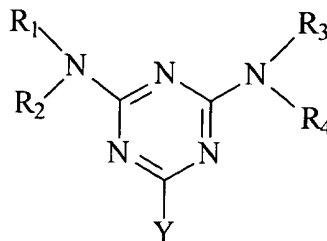
40. (New) The coated substrate of claim 39, wherein said thermal acid generator has the general structure:



where  $\text{R}_7$  is a substituted or unsubstituted alkyl, cycloalkyl or aromatic group wherein the substituted group is halogen, alkoxy, aromatic, nitro or amino group; and

R<sub>8</sub> to R<sub>12</sub> are independently selected from hydrogen, linear or branched C<sub>1</sub> to C<sub>4</sub> alkyl, alkoxy, amino, alkylamino, aryl, alkenyl, halogen, acyloxy, cycloalkyl, or annulated cycloalkyl, aromatic and heterocyclic groups.

41. (New) The coated substrate of claim 39 wherein said amino cross-linking agent has the general formula



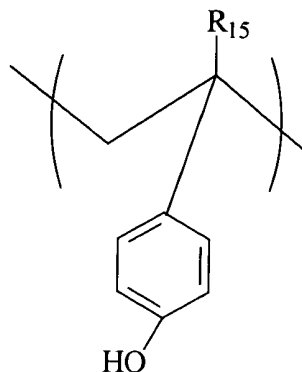
wherein Y is NR<sub>5</sub>R<sub>6</sub>, or a substituted or unsubstituted aryl or alkyl group, R<sub>1</sub> to R<sub>6</sub> are independently a hydrogen or a group of the formula -CH<sub>2</sub>OH or CH<sub>2</sub>OR<sub>17</sub> where R<sub>17</sub> is an alkyl group of about 1 to 8 carbons.

42. (New) A process for the production of relief structures comprising the steps of:

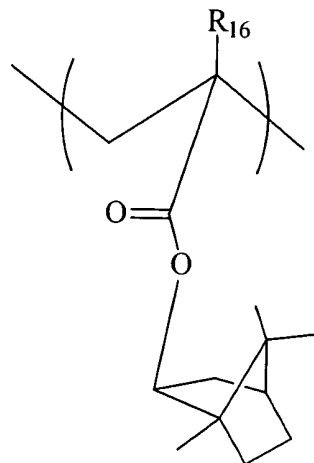
- (a) forming a coated substrate; wherein said coated substrate comprises a substrate; a thermally cured undercoat disposed on said substrate; and a radiation-sensitive resist topcoat disposed on said thermally cured undercoat; wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid generator; and wherein said hydroxyl-containing polymer further comprises monomer units of cycloaliphatic ester of acrylic or methacrylic acid units;
- (b) imagewise exposing said radiation-sensitive resist topcoat to actinic radiation; and
- (c) forming a resist image by developing said radiation-sensitive resist topcoat with a developer.



43. (New) The process of claim 42, wherein said hydroxyl-containing polymer comprises the following monomer units:



(A)



(B)

wherein R<sub>15</sub> and R<sub>16</sub> are independently a hydrogen or a methyl.

44. (New) The process of claim 43, wherein the mole % of monomer unit (A) is about 25 to 60 mole % and the mole % of monomer unit (B) is about 40 to 75 mole %.

45. (New) The process of claim 42, further comprising the step of: removing said thermally cured undercoat composition to form an image thereof.

46. (New) A process for the production of relief structures comprising the steps of:

(a) forming a coated substrate; wherein said coated substrate comprises a substrate; a thermally cured undercoat disposed on said substrate; and a radiation-sensitive resist topcoat disposed on said thermally cured undercoat; wherein said thermally cured undercoat comprises a thermally cured composition comprising a hydroxyl-containing polymer, an amino cross-linking agent and a thermal acid

generator; and wherein said hydroxyl-containing polymer comprises biphenyl acrylate or methacrylate and hydroxyethyl acrylate or methacrylate;

(b) imagewise exposing said radiation-sensitive resist topcoat to actinic radiation; and

(c) forming a resist image by developing said radiation-sensitive resist topcoat with a developer.

47. (New) The process of claim 46, wherein the amount of biphenyl acrylate or methacrylate is about 50 to 90 mole % and the amount of hydroxyethyl acrylate or methacrylate is about 10 to 50 mole %.

48. (New) The process of claim 46, further comprising the step of:  
removing said thermally cured undercoat composition to form an image thereof.

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